

a' 7 (a) each decision unit receives a pair of input values, each  
8 input value containing a data value and a partial address,  
9 wherein each of the plurality of decision units comprises:  
10 (i) a binary operator for generating a binary decision  
11 representative of a local address of the selected data value,  
12 (ii) a multiplexer coupled to the binary operator for  
13 generating one of the pair of input values as output and with the  
14 output being selected by the binary decision, and  
15 (iii) a storage element coupled to the binary operator  
16 and the multiplexer for storing the output of the multiplexer and  
17 the binary decision which is added to the partial address of the  
18 selected data value; and  
19 (b) each decision unit generates a value representative of a  
20 selected data value and the partial address of the selected data  
21 value and the decision unit of the last computation stage  
22 contains the specific value.

A2  
Sub  
B2  
1 3. (Amended) The system of claim 1, wherein the binary operator  
2 selects that minimum value of the pair of data values contained  
3 in the pair of input values.

1 4. (Amended) The system of claim 1, wherein the binary operator  
2 selects the maximum value of the pair of data values contained in  
3 the pair of input values.

Sub  
E  
A3  
1 6. (Amended) The system of claim 1, wherein the partial address  
2 of an input value at computation stage i is the (i-1) most  
3 significant bit of the storage element of computation stage (i-  
4 1).

1 7. (Amended) The system of claim 1, wherein the partial address  
2 of an input value at computation stage i is the (i-1) least

3 significant bit of the storage element of computation stage (i-  
4 1).

1 12. (Amended) An apparatus for obtaining information on a  
2 specific value within a pair of inputs, wherein each input  
3 contains a data value and a partial address of the data value,  
4 the apparatus comprising:

5 (a) a binary operator which compares the data values and  
6 which generates as output a binary decision representative of a  
7 local address of the specific data value;

8 (b) a multiplexer coupled to the binary operator and coupled  
9 to receive each data values along with its partial address which  
10 generates as output the specific data value along with its  
11 partial address based on the binary decision; and

12 (c) a storage element coupled to the binary operator and the  
13 multiplexer which stores the output of the multiplexer and the  
14 binary decision.

1 16. (Amended) In an array of N data values, a method of  
2 determining an address for a result, the result being the output  
3 of a binary operation defined in the array of data values each  
4 data value having W bits, the method comprising the steps of:

5 (a) performing, at each computation stage i of  $\log_2 N$ ,  
6 computation stages,  $N/2^i$  binary operations on the data values of  
7  $N/2^i$  pairs of input values using a binary operator, wherein each  
8 input value includes a data value and a partial address, wherein  
9 each of the binary operations generates a binary decision  
10 representative of a selected data value and the partial address  
11 of the selected data value;

12 (b) multiplexing at each computation stage each pair of  
13 input values using a multiplexer and producing an output  
14 determined by the binary decision; and

15 (c) storing at each computation stage the binary decision  
16 and the selected input in a storage element.

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